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## Original Article

# Outcome of Surgery in different Parotid Neoplasms

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### Abstract

**Objective:** To determine outcome of surgery in different parotid neoplasms.

**Study design:** Cross sectional study from August 2010 to July 2014.

**Settings:** Department of Otolaryngology and Head-Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

**Method:** 60 postoperative patients of different parotid neoplasms were included in this study. 33 were males and 27 were females between 21 years to 80 years who were treated between August 2010 to July 2014. The study based on history, clinical examinations, radiological, laboratory, cytology reports and histopathological examination.

**Results:** Majority of the patients were within 41 to 70 years of age. Frequency of benign tumour were more in 4<sup>th</sup> and 5<sup>th</sup> decade 42(87.5%) and malignant tumour in 5<sup>th</sup> and 6<sup>th</sup> decade 8(66.7%). Common presenting features were pain 8(66.7%), skin involvement 3(25.0%), facial nerve palsy 3(25.0%), metastatic neck nodes 3(25.0%) in malignant cases. In benign cases 45(93.7%) were pleomorphic adenoma, 3(6.25%) Warthin's tumour. In malignant cases mucoepidermoid carcinoma were 7(58.3%), adenoid cystic carcinoma 3(25.0%). In benign parotid tumour, superficial parotidectomy were done in 45(93.75%) and total conservative parotidectomy 3(6.25%). In malignant tumour total conservative parotidectomy were done 5(41.7%), total radical parotidectomy done 4(33.3%), extended radical parotidectomy 3(25%). Histopathological study showed 45(93.75%) were in pleomorphic adenoma, 7(58.3%) mucoepidermoid carcinoma.

**Key word:** Parotid neoplasm, surgical outcome.

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### Introduction

The parotid gland is the largest gland among all the salivary glands. It is divided into superficial and deep lobes by the traversing facial nerve and its branches. The superficial lobe is the site mostly involved 90% by neoplasms. While the deep lobe tumours accounts for approximately 10% of the parotid tumours.<sup>1</sup> Salivary gland tumours represent about 3% of all the neoplasms of head and neck.<sup>2</sup> approximately 80% tumours are located in the parotid gland. 80% are benign in nature. 80% are pleomorphic adenomas followed by warthin's tumours are 4-14%.<sup>3,4</sup> If there is clinical evidence of bilateral parotid

swelling warthin's tumour should be suspected, being the most frequent synchronous or metachronous bilateral histological type.<sup>5,6</sup> Mucoepidermoid carcinoma is the commonest malignant tumour account for 4-9% of the salivary tumours.<sup>7</sup>

In the 19<sup>th</sup> century, enucleation was performed for parotid gland tumors which was had 25% recurrence rate. In the 20<sup>th</sup> century, the concept for more extensive surgery to reduce the high rate of recurrence came and superficial parotidectomy became popular as the minimum procedure. Today, the widely accepted procedure for benign parotid gland tumours is superficial parotidectomy while for malignant tumors, the option ranges from total to extended parotidectomy followed by post operative radiation for tumors with residual disease or positive lymph nodes.

### Methods

This surgical audit was carried out at the Department of Otolaryngology and Head-Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from August 2010 to July 2014. All adult patients of both sexes who presented with parotid gland tumour and underwent parotidectomy were included. Patients with diseases such as parotitis, parotid abscess were excluded. Initial diagnosis was done by history, clinical examinations, laboratory, FNAC and radiological evaluations. Surgery, histopathological examination, complications and outcome was noted.

### Results

Out of the total 60 patients with tumours of the parotid glands, the age ranged from 21 to 80 years. Majority of the patients 42(70.0%) were in the 4<sup>th</sup> and 5<sup>th</sup> decades in benign and 8(66.7%) were 5<sup>th</sup> to 6<sup>th</sup> decades in malignant cases. 33(55.0%) were males while 27(45.0%) were females. The ratio was 1.22:1. Swelling in the parotid region constitutes the most frequent presenting features found among all the patients in both cases followed by pain 8(66.7%), skin involvement 3(25.0%), facial nerve palsy 3(25.0%), metastatic neck nodes 3(25.0%), trismus 2(16.7%) in malignant cases. There were 48 patients of benign parotid tumour. Pleomorphic adenoma were 45(93.75%), Warthin's tumour 3(6.25%). 12 patients had malignancy. Mucoepidermoid carcinoma were 7(58.3%), adenoid cystic carcinoma 3(25.0%). Respectively 1(8.3%), 3(25.0%), 4(33.3%) and 4(33.3%) cases were stage I, stage II, stage III and stage IV. The most common surgical procedure were superficial parotidectomy 45(93.75%) and total conservative parotidectomy 3(6.25%) in benign cases. In malignant cases 5(41.7%) were total conservative parotidectomy, total radical parotidectomy 4(33.3%) and extended radical parotidectomy 3(25%). Histopathological study showed 45 were in pleomorphic adenoma, 7 mucoepidermoid carcinoma. There was no permanent facial palsy. Temporary facial palsy was in 5(10.4%) in benign cases In total radical or extended parotidectomy, permanent facial palsy were 7(58.33%) and temporary facial palsy 5(41.67%), numbness of ear 5(8.3%), infection 2, Frey's syndrome 1, temporary sialocele 1.

**Table-I**  
*Common clinical presentations*

	No. of cases (n=60)	Benign (n=48)	Malignant (n=12)
1. Swelling in pre-auricular or retromandibular region	60	48	12
2. Pain	8	8	
3. Skin involvement	3	3	
4. Facial nerve paralysis	3	3	
5. Metastatic lymph node	3		3
6. Trismus	2		2

**Table-II**  
*Incidence of different types of parotid tumour (N=50)*

	No	Percentage
Benign		
Pleomorphic adenoma (mixed tumour)	45	93.75
Warthin's tumour (adenolymphoma)	3	6.25
Malignant		
Mucoepidermoid carcinoma		
Low grade - 5	7	58.3
High grade - 2		
Adenoid cystic carcinoma	3	25.0
Adenocarcinoma	1	8.3
Carcinoma in ex-pleomorphic adenoma	1	8.3

**Table-III**  
*Staging for malignant parotid gland tumour*

Stage	No of grading	Percentage
Stage - I	1	8.3
Stage - II	3	25.0
Stage - III	4	33.3
Stage - IV	4	33.3
Total	12	100.0

**Table-IV**  
*Surgical treatment of different parotid neoplasms*

Types of surgery	No of cases	Percentage
Benign tumour		
Superficial parotidectomy	45	93.75
Total conservative partotidectomy	3	6.25
Malignant tumour		
Total conservative partotidectomy	5	41.7
Total radical parotidectomy	4	33.3
Extended radical parotidectomy with excision of local skin with neck dissection	3	25.0

**Table-V**  
*Histological grading for malignant parotid gland tumour*

Grade	No of grading	Percentage
Grade - I	1	8.3
Grade - II	6	50.0
Grade - III	3	25.0
Grade - IV	2	16.7
Total	12	100.0

**Table-VI**  
*Complications of surgery*

Complications	No of patients
Facial nerve palsy	
Benign	
Permanent facial nerve palsy	0
Temporary facial nerve palsy	5
Malignant	
Permanent facial nerve palsy	7
Temporary facial nerve palsy	5
Numbness of ear	5
Infection	2
Frey's syndrome	1
Temporary sialocele	1

### Discussion

This series focused on parotid gland neoplasm which is the commonest site among all the salivary glands. It is involved by a variety of different benign and malignant conditions for which a wide range of surgical procedures are available.<sup>9-12</sup>

In this study, among 60 patients 26 were males and 22 were females in benign and 7 were males and 5 were females in malignant diseases. So these were a slight male predominance. Several published studies have reported more frequent involvement of females than males.<sup>13</sup> Dorairajan from India reported male predominance.<sup>14</sup>

In this study, age ranged from 21 to 80 years. Majority of the patients 42(70.0%) were in 4<sup>th</sup> and 5<sup>th</sup> decade in benign and 5<sup>th</sup> and 6<sup>th</sup> decades in malignant disease. Several studies from the west have reported these disorders to be more common in relatively advanced age group.<sup>15</sup>

In this study one tumour was originated from the deep lobe of the parotid presented with a swelling of lateral pharyngeal wall. Sign of

malignancy were pain 8(66.7%), fixity to the skin 3(25.0%), facial nerve paralysis 3(25.0%), lymph node metastasis 3(25.0%) and trismus 2(16.7%). According to Thackray et al pain is infrequent in adenoid cystic carcinoma but in squamous cell carcinoma pain is observed in  $\frac{3}{4}$  of the patients. There may be intractable pain due to involvement of nerve and base of the skull and there may be associated paralysis of the cranial nerve.<sup>16,17</sup> Facial nerve paralysis occurs only 3(25.0%) in malignant cases. Benign tumours had no facial nerve involvement. Malignancy may involve the trunk or any branch of facial nerve. According to Eneroth's work involvement of the facial nerve in malignant parotid tumour is 40%.<sup>18</sup>

In this study pleomorphic adenoma was the commonest 45(93.75%) benign tumour affecting the parotid gland followed by Warthins tumour 3(6.25%). Most of the literature had reported pleomorphic adenoma was the commonest pathology affecting the parotid gland.<sup>19</sup> The share of malignancy was about 12, Kara et al. had reported 24% malignancies in parotid gland disorders.<sup>12</sup> Takahama et al. have reported even higher frequency of malignancies upto 40%.<sup>15</sup> In this series the commonest malignant tumour was mucoepidermoid carcinoma followed by adenoid cystic carcinoma. This findings was consistent with most of the literature.<sup>20</sup>

Regarding investigations of my series FNAC was found to be very useful in parotid gland pathology. It was done in all 60 cases (100%) of which 55(91.7%) were positive and related with the study of Lindberg and Ackerman<sup>21</sup>, 5(8.3%) false negative. All were confirmed by histopathological examination.

CT scan is superior to MRI for evaluation of the bony structures, where as MRI may be more helpful in distinguishing between inflammatory conditions and salivary

neoplasms. CT scan is indicated in patients with diffuse enlargement of parotid gland, tumour extension beyond the superficial lobe or deep lobe parotid tumours that are difficult to evaluate clinically. If the parotid mass appears to be fixed to the deeper structures, it is appropriate to proceed with CT to evaluate the extension to parapharyngeal region of the disease. MRI is indicated in patients with facial nerve paralysis. Both imaging methods are helpful and accurate in distinguished deep lobe parotid tumours from other parapharyngeal masses. They are also useful for evaluating suspicious lymph nodes and periphery of the mass (encapsulated or irregular borders).

In this study, superficial parotidectomy was performed in 45(93.75%) and total conservative parotidectomy 3(6.25%) in benign disease. Total conservative parotidectomy 5(41.7%), total radical parotidectomy 4(33.3%), extended radical parotidectomy 3(25.0%) with comprehensive or modified neck dissection in 3(25.0%) in malignant diseases. About 20% of patients with malignant parotid tumour had presented with clinically detectable cervical lymphadenopathy (CN+).

Patients with advanced stage (Stage III or IV) disease, a large primary tumour, close margins, perineural spread, soft tissue extension, facial nerve dysfunction or cervical lymph node metastasis invariably require postoperative radiation therapy. In general, this means that postoperative radiation therapy is indicated for all patients except those with T<sub>1</sub> or T<sub>2</sub> malignant tumours of low-grade histology and clear margins.

Out of these 5(10.42%) patients were developed transient facial nerve palsy which gradually recovered and patients had no permanent facial nerve palsy in benign diseases after surgery. But in total

conservative, radical or extended radical parotidectomy 7(58.3%) patients were developed permanent facial nerve palsy while 5(41.7%) developed transient facial nerve palsy. The incidence of facial nerve palsy varies from 15-29% in the literature<sup>22-24</sup>. Conley states that approximately 50% of the patients had a mild temporary weakness of the facial nerve is rare but temporary paresis occurs in 10-20% cases with recovery time, varying from weeks to months.<sup>25,26</sup> Numbness of the ear occurs in 5(8.3%) cases due to cutting of great auricular nerve. Recovery of sensation may be slow.

In the present series follow up could be made for 4 years none of the pleomorphic adenoma showed any recurrence. The warthin's tumour had no recurrence and facial nerve palsy.

There were 2 cases of facial nerve palsy and no recurrence in mucoepidermoid carcinoma, in adenocystic carcinoma 3 were facial nerve palsy and 1 recurrence. In adenocarcinoma 1 facial nerve palsy and 1 recurrence, carcinoma ex-pleomorphic adenoma 1 facial nerve palsy and no recurrence.

### Conclusion

Parotid gland is the principle site of salivary gland tumours. Males are mostly affected. Majority of patients present with painless lump and pleomorphic adenoma is the commonest benign tumour, while mucoepidermoid carcinoma is the most common malignant tumour. Superficial parotidectomy were the most commonly offered surgical procedure and post operative risk of facial nerve palsy and recurrence were decreased.

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